

Running head: A DETAILED ANALYSIS: IMPROVING THE CITY'S RATING

A Detailed Analysis:
Improving the City's ISO Rating
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Abstract

The Insurance Services Office (ISO) Property Classification (PPC) for the City of Traverse City (CTC) is “5”. The problem for this Applied Research Project was to identify those operations that need to be changed to meet the ISO requirement for a classification rating of “4”. A descriptive research was used and answers the following questions: What are the major requirements of an ISO rating of “4”? What are the current Traverse City Fire Department protection operations as related to the City's ISO rating? Which of these items is the TCFD Administration currently working on implementing or obtaining? What requirements do the TCFD need to implement or obtain to meet the ISO rating of “4”? What have fire departments of comparable size experienced as their city's ISO rating changed from a “5” to a “4”?

The results of the literature review, survey instruments, interviews and departmental evaluation provided data that was gathered and analyzed in order to formulate an effective and efficient plan to improve the CTC classification rating. From the results of this applied research, it was recommended that the TCFD make improvements to the current training program, purchase required equipment, re-deploy apparatus among the existing fire stations, and develop a strategy for pre-fire planning of all target hazards in the City.

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Introduction

The Insurance Services Office (ISO) Property Protection Classification (PPC) for the City of Traverse City (CTC) is “5”. This number represents the capability of the CTC and its fire department in handling fire emergencies within its community. This grade was given in December of 1994. The rating scale for the PPC ranges from 1-10, where the best fire capability and operations are represented by the lower numbers in the scale. Everyone agrees that the safest community is in the best interest of the citizens and businesses and any effort to improve such an environment would be worth investigating. It has been decided after much discussion and debate that an improved ISO rating would be a benefit to everyone concerned and the Traverse City Fire Department (TCFD) should spearhead the effort.

It is the goal of the TCFD to protect the life and property of the citizens of Traverse City and to mitigate any hazard through the use of its resources. The PPC rating of “5” as given by the ISO is an indication of the TCFD's fire operation capabilities. The community leaders believe that an improved rating by the ISO would benefit the business community by its lower insurance premiums and the fire department with its increased capability in handling fire emergencies. The problem for this Applied Research Project is to identify those operations that need to be changed to meet the ISO requirement for a rating of “4”.

The purpose of this applied research paper is to identify those operations that need to be changed by the City to improve its ISO rating to “4”. A descriptive research method is used and answers the following questions:

1. What are the major requirements of an ISO rating of “4”?

2. What are the current TCFD protection operations as related to the City's ISO rating?
3. Which of these items is the Traverse City Fire Department Administration currently working on implementing or obtaining?
4. What requirements do the Traverse City Fire Department need to implement or obtain to meet the ISO rating of "4"?
5. What have fire departments of comparable size experienced as their city's ISO rating changed from a "5" to "4".

Background and Significance

The CTC is an older city incorporated in the late 19th century and is located in the in the northwest corner of Michigan on the shores of Grand Traverse Bay. The City is landlocked and surrounded on three sides by fast growing townships that are currently experiencing urban sprawl.

Traverse City last experienced an ISO grading evaluation in 1994 and its civic leaders believe it is time to reevaluate its fire suppression capabilities. The City also feels that any improvement in its ISO rating may also benefit the local business owners by receiving lower insurance bills. It has also been discussed that if ISO finds a decrease in services by the City, and thus a worse ISO classification, it may result in higher insurance rates for business owners.

The TCFD is a career department with a long history dating back to the 1880s. The department has long been rich in tradition and history in the fire service within the community and it has been carried forward throughout the years to its current status. It serves a community which is very much like any other small city in our country with its

wide range of hazards but on a smaller scale. Its geography includes an expansive waterfront district, a vibrant downtown business area including several high-rise structures, a commercial airport, a rail system, and the typical tree lined urban neighborhoods.

The fire department's goals and mission statement have developed and changed throughout the last 10 years while the city itself has changed. The department's resources, including manpower, have changed dramatically in the last 10 years with the retirement of 50% of its work force and the City has experienced problems in hiring qualified replacements. This problem has become an area of concern with the City management staff. Although the fire officials have known about the problem for some time, it was only recently since the ISO rating schedule has been discussed, that the fire department's organization has come under review. The high turnover rate in personnel that has occurred since the last ISO rating has affected the daily operations of the fire department including the hiring of firefighters, purchasing of equipment, and documentation of training. These are all vital components in the overall fire department component of the ISO grading schedule and thus have been targeted for a thorough and detailed review. This is the catalyst for the preparation of this applied research paper.

The ISO rating process has its roots before the start of the 20th century due to the occurrences of several noted conflagration-type fires. The insurance industry at the time found that certain cities were noted to be safer than others in the country. In 1916, the National Board of Fire Underwriters (NBFU) was formed to assist the insurance industry in assessing the effectiveness of a city's fire resources and its ability to extinguish fires. The NBFU used 7 criteria for developing a document for grading cities and towns

according to their fire defenses. A rating of 1-10 was used similar to that of the current ISO rating system. In the 1970's, the system was revamped due to pressure and the responsibility for the grading system was shifted to the ISO. In 1980, ISO published its first Fire Suppression Rating Schedule (FSRS) and its format is the same as the one used today. (Granito and Hickey, 1999)

A review of the CTC's 1994 ISO classification details of the ISO Improvement Statement to the City (Appendix B) shows that the total fire department component received 21.85 points of a maximum total of 50. The fire department component of the classification details (Appendix B) is broken into nine items which are reviewed by the ISO field representative. The largest of these nine is item 571 (Appendix B), Credit for Company Personnel, which has a possible 15+ points in the grading schedule and is also the item the department shows the largest numerical shortcoming. This issue is seen as a key point in the overall review in the department and has been the target of much discussion since the advent of NFPA 1710, The Standard on the Organization and Deployment of Fire Department Suppression and Medical Operations to the Public.

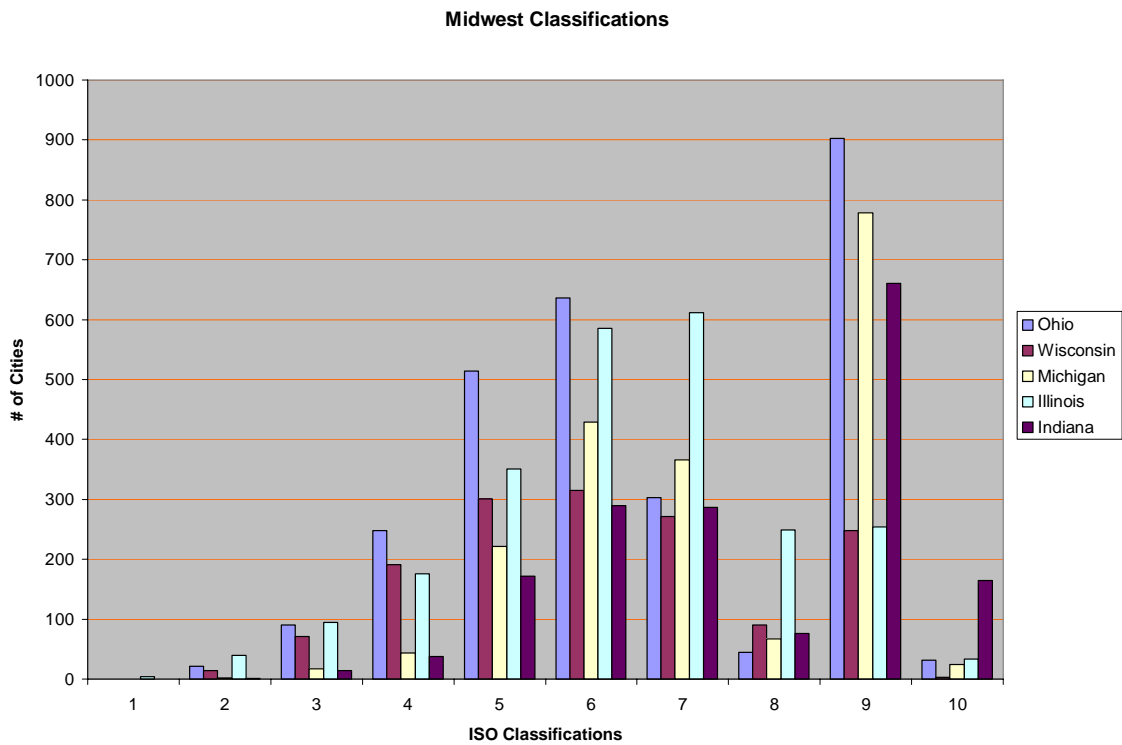
Other important items noted in this classification detail page (Appendix B) was credit not received for the distribution of engine companies in the city, lack of training facilities and the improvement needed in the current training program. The department has made great strides in its effort to improve the training component of its operations.

Because of the importance of improving fire department operations and the relation to the current CTC ISO rating, it has been suggested by my superior that this subject be used for my Applied Research Project in the Executive Development course of the Executive Fire Officer program. This problem includes many facets of the Traverse

City Fire Department’s operations and fire suppression capabilities within the community and relates specifically to the United States Fire Administration’s (USFA) Operational Objectives. They include reducing the loss of life for all members of the community including the firefighters and increase the department’s presence as the leader in risk reduction within the CTC.

Throughout the country, statistics show that most cities have a classification rating of “9”. As Table 1 illustrates, Michigan, Indiana, and Ohio also have the majority of its cities rated at a “9”. Illinois has the majority of its cities at a “7” and Wisconsin has a majority of its cities at a “6”. These Midwest states give a realistic view for this project because they are of similar geographical size and population to Michigan.

Table 1



Literature Review

A research of the available literature resources was performed in the Learning Resource Center at the National Fire Academy. Additional work was completed through the interlibrary loan service at the Traverse City Area Library and the Northwestern Michigan College's Osterlin Library. Interviews with fire and insurance industry professionals were also used in this research in addition to two separate surveys instruments.

One of the goals of the TCFD is to constantly monitor its operating efficiency and find ways to improve its performance in both emergency and non-emergency responses. By increasing its effectiveness a department creates a safer community and in turn affects the insurance rating for property owners in a positive manner. (ISO, 2004).

The ISO (FSRS) is a publication whose purpose is to review a community's fire suppression capabilities and to develop a (PPC) for the purpose of assigning fire insurance ratings. (FSRS, 2002) The current ISO FSRS is based on a number of concepts that impact the grading of community's fire resources. These concepts provide a measure of the community's ability to extinguish a fire and controlling and confining it to the building of origin. The schedule also measures the water supply needs for the department in its suppression efforts and takes into account any automatic agreements a community may have in place with surrounding fire departments regarding the assistance of essential apparatus and personnel on initial alarms. The schedule also takes into account the communications center's ability to dispatch fire calls. However, like the water resource component, fire departments often do not have control over improvements required to receive a better ISO rating. It should be noted however that

not all insurance companies use the ISO grading system (Kang, 2003). ISO has been under considerable criticism for the method in which they evaluate fire protection. Late in 2000, State Farm Property/Casualty Insurance Group, the largest insurer for residential buildings in the country, have abandoned their use of the ISO PPC and developed their own rating system based on prior claim experiences. This system called Subzone rating factor is based on State Farm's prior claim experience (Kang, 2003).

Some say that the ISO methods are outdated. The industry question now is whether other insurance companies will follow State Farm's lead? (Gasaway, 2001) For instance, homeowners have different rules regarding classifications for their insurance rates than do commercial and industrial building owners. This is because ISO believes residences require less fire suppression resources and because of this fact, makes less of a distinction than the PPC program allows. Insurers instead group the classes into bands with each band having a different rate. The better the classification of the band, the lower the rate. (ISO, 2004) However, even with the criticism that ISO may receive about their grading system, 97% of the insurers use the ISO PPC for commercial and residential markets. (McLaughlin, 2004)

Assistance was needed in interpreting the 1994 ISO Classification Detail Statement and the initiation of a new review for the City. ISO offers such assistance with the review and thus a phone call was placed to the Chicago office of ISO. Derek Thomas (personal communication, September 6, 2004) stated that the first step in the review of a city's PPC is to analyze the previous Improvement Statement issued by ISO. The last ISO Improvement Statement issued to the City of Traverse City was December 9, 1994. (Appendix B)

The Classification Detail sheet of the Improvement Statement is issued by the ISO after a comprehensive review and this document states the parameters upon which municipality is graded and details for what the percentage points are based. The percentage points earned are then categorized into classes and recorded for the insurance industry to use as a basis for premium rate development. ISO notes in their analysis that by offering economic benefits to those communities who actually support their fire department, the PPC creates incentives to improve the public fire protection (ISO, 2004). Interestingly enough, an ISO commissioned survey of 501 Fire Chiefs showed only 76% knew of their department's PPC number. (Festa, 2004)

In Minnesota, Chief Gasaway of the Roseville Fire Department asked the ISO Chicago office what could be the expected savings in insurance premiums for a business in Roseville, if the city's classification was improved from Class "3" to Class "2". The fire officials in Roseville were told that ISO could not supply them with an answer but instead should look to an insurance industry representative such as an insurance broker. Roseville fire officials then contacted a local insurance agent who after a brief research brought them surprising results. Not one insurance company would give a reduction in insurance rates if Roseville's ISO rating were to improve from a Class "3" to a Class "2". The agent explained that the insurance industry lumps all the properties in the 1-4 classifications together and gives them all the same rate. They also found that some buildings will have their own insurance ratings based on several factors including size, occupancy, and built-in-fire protection systems. Chief Gasaway discovered that improving the ISO rating may not be worth the trouble. (Gasaway, 2003)

Currently, the CTC has a classification of “5” with a total credit of 51.61. To receive a PPC of “4”, Traverse City would have to receive at least 60 credit points as shown in Appendix A. A city or township wishing to achieve a classification rating of “4” would need to receive between 60-69.99 credit points in their evaluation. (ISO FSRs Handbook, 2003) This means that 8.39 percentage points would need to be gained to receive this classification. (Appendix A) This can be obtained by a combination of increased credit by the Fire Department (FD), Emergency Dispatch Center, or Water Department along with the consideration that the “divergence” be reduced between the Fire Department and Water Department credits. “Divergence” is the reduction in credit to reflect the difference in the relative credits for fire department operations and the water supply. (Strawderman, 2001) “Divergence” is calculated using the following formula.
$$\text{Divergence} = (\text{FD Points} \times .8) - (\text{Water Supply Points}) / 2$$
 (FSRS Handbook, 2003)

The latest Improvement Statement details those items for which the fire department did not receive full credit. They include: Engine Companies, Reserve Pumpers, Ladder Service, Reserve Ladder Service, Distribution, Company Personnel, and Training. (Appendix B)

In reviewing its fire operations as related to its PPC of “5”, the TCFD completed a total inventory of equipment involving fire suppression, water works, and communications.

A decision was made at the management level of the city government to explore the feasibility of an action plan to improve the ISO PPC of the CTC from its current ISO Class of “5” to “4”. In a meeting with TCFD Chief Ed Fisher, the author was told of the

city management's decision to investigate the feasibility to improve the ISO PPC rating and the author's responsibility in its completion. (E.Fisher, personal communication, June 15 2004) The City Manager and the Fire Chief of the department agreed that because of the lack of knowledge on the subject, the investigation into the ISO rating evaluation would best be undertaken by the author in this ARP for the EFO program.

An investigation into this subject revealed some interesting data. A small scale survey in New York State showed a majority of firefighters believed an improvement from ISO Class "4" to "3" would not significantly assist them in providing additional fire protection. (Festa, 2004) In Parrow (1997) the author states that his town, Chelmsford, Massachusetts attempted to improve its ISO classification rating from a "4" to a "3" in order to improve its insurance rates for its business owners. Later they were disappointed when the savings did not materialize. In Arizona, Grill (1991) found that two fire districts successfully joined efforts to lower their ratings to save insurance rates for their property owners.

An interview with insurance agent David Kaplan in his Traverse City office gave great insight into an insurance industry agent's attitude towards a fire department's attempt in improving the insurance rates for its customers. Kaplan (personal communication, 2004) states that any attempt to minimize insurance payouts due to fire is well received by all insurance companies especially high risk customers. He indicated that all insurance companies are willing to give breaks to customers depending on the particular cost saving ideas a company may have. It was very strange to Kaplan when he was told that bi-annual fire prevention inspections by a fire department are not given credit by the ISO but pre-fire planning had value.

To obtain an improved PPC from ISO several operational components of the TCFD organization would require greater scrutiny. They include training, equipment, apparatus, and pre-fire planning. The department already has a much improved fire inspection program but an interview with Rodger Wesch, Senior Field Representative of ISO (personal communication, 2004) revealed no credit for such a program. Only a well defined and documented plan involving the pre-fire planning of the structures in the district that pose a greater fire hazard to the community is credited, including drawings and sketches. Wesch states that valuable points are lost by many departments in the State of Michigan each year because of the lack of a coordinated plan. It was because of this finding that a program to start pre-fire plans in the community is essential. (Wesch, personal communication, 2004)

Training is a key component of every modern fire department and is a valuable tool when implemented correctly and ISO gives 9% of the total score for training. (ISO 2003) Although 9% seems inconsequential, it can still have a considerable impact on a department's overall rating. (Grindle Jr., 1999) Training not only contributes to the effectiveness of fire department operations but is proven to reduce both death and injuries to firefighters and civilians. Training can be as useful a tool as a department allows by creating different methods by which full-time, paid on-call and volunteer fire departments choose. (Landreville, 2004) McLaughlin (2004) states in his article that the ISO survey in July 2003 of 500 top fire department chiefs revealed that more than three quarters of those polled responded that they would increase training requirements in the upcoming year. According to the FSRIS, ISO encourages training and gives as many as 3.15 points if a department has a facility to train fire fighters in suppressing structure

fires. If the facility is not the property of the department, credit will still be given if there is permission given to use the property and documented training can be shown within the last year. ISO will also give 2.25 points to a fire department if they document company training at the fire station in 20 hours per month of structural fire fighting per member. (Straw, 2004)

In an interview with Rodger Wesch, he stated training by a department can be credited in two ways. The first is by demonstrating the 20 hours per month and the second is by including (8) three-hour drills per year in structural firefighting. If 20 hours can't be completed per month, the hours trained will be credited on a prorated basis. (Dickson, 2000) Wesch also stated that to receive full credit for training, the department must also document regular company drills in structural fire-fighting for its members. (personal communication, 2004) The TCFD received 3.15 (35%) points out of the possible total of 9. The department was not credited points for a facility to train and documentation of structural fire training. If an area has five or more three story buildings in its city, a four-story drill tower is required. (Dickson, 2001) The Buffalo Grove Fire Department obtained a classification rating of "2" by documenting all firefighting training and making sure the documentation is in each fire fighter's file. The first volunteer fire department to secure an ISO classification rating of "1" obtained it from a "5" and did it with credit received with excellent documentation of its training. There are many examples of departments big and small who improved their ISO rating by providing documentation of fire fighting training. (Grindle, Jr. 1999) Pre-fire planning inspections were also absent at the time of the last inspection and no points were credited for this requirement. (Appendix B) In an interview with Chief Fisher of the

Traverse City Fire Department, priority is given to the implementation to pre-fire surveys on target hazard structures within the city. A new computer program was recently purchased to assist the fire companies in implementing the surveys. (Fisher, personal communication, October 17, 2004)

Another unit of the Fire Department component of the classification schedule is the credit given for Engine Companies and Ladder Service. In the last review, the TCFD received 73 % credit for its Engine Companies and equipment and only 16% for its Ladder Service component. (Appendix B) The loss of credit was for insufficient equipment, insufficient pump testing records, and lack of ladder testing records. Asked about the current condition of the TCFD apparatus, Chief Fisher stated that he believes all deficiencies were corrected in the past several years. (Fisher, personal communication, October 17, 2004)

The CTC also lost points because of the distribution of first due engine companies and ladder service to the built upon area of the community. Guidelines indicate that engine companies shall be at least 1 ½ miles and ladder service shall be 2 ½ miles from every structure in the city. Since the last ISO evaluation, the TCFD has reassigned apparatus to different stations and has added an additional station at the Cherry Capital Airport (CCA). (E. Fisher, personal communication, October 17, 2004)

In the interview with Mr. Wesch of ISO, he stated that the placement of a staffed engine at an additional fire station will most probably gain credit because it will reduce the area not covered by engine companies in the last classification review. (Wesch, personal communication, 2004)

The last component of the Fire Department section of the Improvement Statement is that of Credit for Company Personnel. Besides the Water Supply component, it is the single most important item in the FSRS. (Straw, 2004) This section is unique because it doesn't have an exact amount of total credit available. In the interview with Mr. Wesch of ISO company personnel can be given 15 plus credit points. The TCFD consists of 30 full-time career personnel including three firefighter/inspectors who are responsible for responding to initial fire calls. The TCFD was deficient in the 1994 Improvement Statement and an increase in the on- duty personnel by one person will increase the fire department credit by 0.5%. (Appendix B) ISO credits full-time members as one point while three volunteer or part-paid members are credited as one. Wesch also stated that the ISO evaluator will be looking for policies of minimum staffing and in the absence of such written guidelines, sample data which shows the average amount of fire personnel responding on initial fire incidents is calculated. Firefighter/Inspectors that are assigned to administrative duties, but are responsible for fire response are credited as follows: 2 FF/Inspectors = 1 Firefighter credit. (Wesch, personal communication, 2004)

To identify areas that should be recommended for improvement in fire department operations, the author conducted a survey to identify fire departments in Michigan which improved their ISO classification rating from a "5" to a "4". The results are shown in Appendix C.

Sometimes a fire department doesn't set out to improve its ISO classification but the improvement occurs because changes and upgrades have occurred over time which results in a better grade. The Portage Fire Department is such one agency who benefited

from an improved ISO classification over a 15 year time period through apparatus purchasing, improvements to water department resources and increased staffing. (R. Lawton, personal communication 2004)

It must be remembered however that an improvement in fire department resources and not by the water supply or an improvement in water supply while the fire department remains the same may cause a larger divergence in the ISO evaluation. ISO believes that if credit points are significantly higher or lower for either the "Fire Department" or the "Water Department" component of the rating, the city should not receive full credit. The theory is that a less capable fire department can't effectively utilize a more capable water supply and vice versa. (Grindle Jr., 1999) An interview with John Palmateer of the Traverse City Water and Sewer Department gave insight into the possible improvement to the 31.06 points earned in 1994. Palmateer (personal communication , December 2004) states that several improvements have been made to the infrastructure of the water mains in the city. Larger water mains and "loop systems" in key areas have been installed in order to bring a better water supply to several neighborhoods. The inspection program has been increased to twice a year and all hydrants have been fitted with a large diameter orifice. Palmateer does not know if additional points will be credited to the city for these upgrades, but he believes the condition of the water supply has improved since the last evaluation.

The communications component of the ISO PPC effects the dispatch capability of Grand Traverse County. The Grand Traverse County Central Dispatch has the responsibility for dispatching all fire units in the county including the TCFD. The points credited to the CTC for the communications component in 1994 was 5.49 of a possible

10. A good indication of the current status of the Grand Traverse Central Dispatch's ability to receive and handle fire alarms is seen by the current points credited in the 2004 Classification Survey for the Grand Traverse Metro area townships (Appendix E). This area surrounds Traverse City on the south and east, and is made up of mostly volunteer and paid-on-call fire departments. The survey (Appendix E) shows 5.20 points credited to the dispatch center. An interview was conducted with Keith DeYoung, Assistant Director of the Grand Traverse Central Dispatch, to determine if changes in its ability to receive and handle alarms were going to be made. Mr. DeYoung stated that he was not aware of the 2004 evaluation or the areas of deficiency in the Grand Traverse Metro Details Summary or the loss of .29 credit points since the last evaluation. He indicated that Grand Traverse County had cut the dispatch agency's latest budget and he doubted that his operations would improve in the near term. But Mr. DeYoung was hopeful that if he presented to the county board the areas of deficiency, he might be able to show a need for restoration of funds and perhaps an improved communications evaluation. (personal communications, Keith DeYoung 2004)

Procedures

The procedures used in this applied research project were of the descriptive research method and were applied to answer five questions about the current status of the CTC in relation to its ISO classification rating. The descriptive method was used because data was collected to answer questions about the current status of the City's ISO classification rating. The purpose of this research project is to perform an in- depth evaluation of the TCFD's fire suppression resources and its status as it compares to the City's current ISO rating. In addition, information was gathered to develop a plan for the

TCFD to maximize its potential in obtaining the optimum credits to improve on the fire department component of the City's ISO classification rating and to improve the ability of the TCFD to protect property and reduce the loss of lives within the community. As leaders in the community, it is the TCFD's goal to lead in the development of a multi-hazard risk reduction plan in the City.

An interview with Derrick Thomas of the ISO office in Chicago was conducted via telephone in September 2004 to gather data about other similar sized cities in Michigan and in the Midwest. Mr. Thomas was used as the contact point early in the investigation process. The interview was held in early September and was informal and impromptu. Mr. Thomas answered questions in the author's attempt to find a starting point in the research project. The questions asked were: 1) How does a city make arrangements to get a re-evaluation. 2) What documentation does a city need to request an evaluation? 3) Who is the contact person for Traverse City in its attempt to improve its ISO classification rating?

To answer the first research question, a complete inventory was performed on all Traverse City Fire Department apparatus and equipment as required in the ISO Fire Suppression Rating Schedule. Any questions as to the acceptable substitutions were addressed to Rodger Wesch of the ISO office in Farmington Hills, Michigan. All related equipment assigned to Engines 1, 2, and 3 and Ladder 1 were counted and evaluated for credit with the Relative-Value Tables. (ISO FSRS, 2003) These tables give assigned points for equipment required to be on each apparatus.

The next step in my process was to find what work was needed by the TCFD to achieve an ISO Classification Rating of "4". To determine this I analyzed the latest

Improvement Statement for Traverse City given in December 9, 1994. It detailed those items where the fire department, water department, and dispatch center were deficient. It also gave recommendations on remedies for improvement with point values missed on certain items. An inventory of items that were missing or needed improvement was created for review and detailed in a summary sheet shown in the Results section of this paper for further discussion in answering the question, "What is the fire department doing to achieve an improved ISO Classification Rating?"

Interviews with several CTC agency supervisors were required to find out what was currently being done to increase services in the City to improve the ISO Classification Rating. Chief Ed Fisher, City Manager Richard Lewis, and Water Department Supervisor John Palmateer were interviewed to find out if those agencies were currently working on instituting changes to improve the City's ISO Classification Rating. Keith DeYoung of Grand Traverse Central Dispatch was also interviewed.

Palmateer was interviewed in late December of 2004 at the offices of the Traverse City Water and Sewer Department. The purpose of this interview was to identify if the Water Department, through its current operations, would expect an improvement in its ISO credits which would effect the "divergence" score. Several questions were asked in the interview. They are: 1) Has the Water Department made significant improvements in the water system since 1994? 2) What are some of the major improvements made? 3) Were records kept of all changes made to the water system in the past 10 years? 4) Are any improvements planned for the near future? 5) Were any improvements made purposely to increase the ISO rating?

An interview was conducted with Rodger Wesch, Senior Field Representative of ISO in Farmington Hills, Michigan, via telephone to find answers to questions about particular items in the Improvement Statement relating to the City. Mr. Wesch was selected because he had personally completed the evaluation of the Grand Traverse Metro Fire Department in 2004 and was a valuable source of current information in the area. Mr. Wesch was asked particular questions related to the FSRS and his opinion about apparatus, equipment, training, and personnel.

An interview was conducted at the Traverse City office of David Kaplan, Co-owner of the Fitzmorris-Garvin Insurance Agency. Mr. Kaplan was a valuable tool in this research by giving valuable data in relation to commercial properties in the City by comparing insurance rates using different ISO Classification Ratings. Mr. Kaplan also allowed the author to use the Commercial Line Manual for Michigan to find cities in Michigan with ISO Classification Ratings of "4", "5", and "6". These were used for the survey instruments.

An informal discussion was conducted with the City Manager Richard Lewis and Fire Chief Ed Fisher about the importance of the ISO improvement. Chief Fisher was questioned alone about the extent of the fire department's plans to improve on the deficiencies as stated in Appendix B. Each one of the deficiencies was discussed and plans to improve were formulated.

A search at the Traverse City Public Library found a book titled the Directory of Michigan Municipal Officials which listed the phone numbers and names of the individuals with knowledge of the ISO Classification Ratings in selected cities across the

state. These names were used in preparing the survey instruments needed in gathering data.

Two separate survey instruments were used in this research project. These survey instruments were used to locate cities in Michigan that are of similar size that have an ISO Classification Rating of “4” or “5”. These cities which participated in the surveys were asked questions (Appendices C and D) relating to their fire department's capabilities and the changes they made to achieve the rating. Telephone calls were made by the author to several cities to clarify answers and to gather more specific data for this research project.

To gather information and insight into how a fire department improves the ISO of its city, a follow up interview was conducted with a downstate agency that experienced an improvement in its ISO classification rating. A phone call was placed to Fire Chief Randy Lawton of the Portage Fire Department to find out what was done by the city or the department to achieve this improved rating. The phone call was placed because the survey instrument did not provide enough data that might give insight to methods for the CTC to improve on its classification rating.

An interview with Fire Chief Mark Walterhouse of the Auburn Hills Fire Department was completed on November 30, 2004. Chief Walterhouse was selected because Auburn Hills had the same ISO classification ratings of Traverse City (“5”) and obtained it in the same year (1994).

Limitations

The research methodology used in this research project included several limitations due to the nature of the problems involved. The survey instrument used was

limited to cities in the State of Michigan. This was done for two reasons. One was to get a good comparison of “like-sized” cities and fire departments as ours. A second was to get an insurance industry consistent statewide in its insurance premiums and its view on the ISO Classification rating. As was illustrated earlier in Table 1, different states appear to show a pattern in its classification ratings. Michigan has shown a different trend in its classification ratings as do the other Midwest states. Another limitation may have been the method of collecting the surveys which were sent via U.S.mail. Several of the respondents stated that the letters did not arrive and follow-up calls were necessary because of missing answers and missing responses. Many of the responses returned had a response of “did not know”, which might have been due to the survey instrument being sent to the incorrect contact person and not the fire department. New chiefs may have been hired since the last ISO evaluation and some information may not have been known by the submitting person. Some ISO evaluations have not been conducted in some cities for 15 years and in some communities, there are no plans to conduct a re-evaluation.

Results

Survey instruments, interviews, personal observations, and literature reviews were completed to obtain results and solutions to the questions asked in the introduction of this Applied Research Paper. Ten cities were surveyed which had an ISO classification rating of “4” and twenty cities with an ISO classification rating of “5”. Three of the “Class 4” cities and eleven of the “Class 5” cities required follow up phone calls to clarify answers or obtain further information about a particular component of the fire department. Each city was selected because it was similar in size to Traverse City and it had the current

classification of “5” or recently moved to a classification of “4”. The results of these surveys can be seen in Appendices C and D.

Of the 10 cities surveyed in “Class 4”, six have had their rating longer than five years. Only two had any part in improving their change from the last rating. Three cities improved their water supply resources in addition to their communications thus improving the ISO rating. Four of the cities stated that businesses had realized some benefit in the improved insurance rating.

Of the 20 cities surveyed in “Class 5”, sixteen had their rating longer than five years. Only four had any part in improving their change from the last rating. Only one city stated in the survey that the business community had any constructive interest in the city's effort to improve the ISO classification rating. Pre-fire planning was the most subscribed improvement effort taken on by any fire department to improve its overall operational effectiveness. In the final question, only three of the twenty cities surveyed stated that improvements were planned or in progress of its water supply or communications capabilities.

Interviews were conducted with ISO personnel Rodger Wesch of the Farmington, Michigan office and Derek Thomas of the Chicago office. Both men described the new process for inviting ISO to perform an ISO classification evaluation. A complete review of the old Traverse City Improvement Statement from 1994 is necessary. The remarks for each deficiency shall be addressed and if evidence is shown of improvement enough for a valid challenge to the existing rating, ISO will conduct a new evaluation.

An interview with Chief David Peterson of the Plainfield Township Fire Department was conducted to bring light into the subject of problems surrounding is an

improved ISO classification rating. Chief Peterson has long been in the anti-ISO camp for several years ever since his township failed to experience lower insurance rates when the ISO classification rating was improved. Peterson stated that he could not get acceptable answers to questions he asked to ISO about the subject. Peterson also went on that ISO often banded townships and cities into similar classes and this would put all "Class 4" cities together and thus not lower, and sometimes raise insurance rates. A check with two random insurance companies in the Traverse City area could not corroborate these claims as reported by Chief Peterson. Two separate businesses in town were selected using classification ratings of "4" and "5" and the insurance rates were compared. It was observed that there was a lower commercial insurance rate using the "4" rate as compared to the "5" rate.

An inventory was conducted on all fire department apparatus that will enable the CTC to receive credit for the fire suppression component of the classification rating. These apparatus include TCFD Engines 1, 2, 3, and Ladder 1. Several telephone calls to the ISO office were needed to solicit advice and get information relating to equivalent credit for equipment on apparatus. This inventory was required for this project because it enables the TCFD and the CTC to find exactly what areas that is deficient and the costs that would be involved to improve these sections of the fire department operations. The following is a summary of those deficient items that need attention:

Engine 1- (1) 2 1/2" Playpipe with shutoff.

Engine 2- (1) Distributing nozzle (piercing nozzle can be substituted), (1) 2 1/2"

Playpipe with shutoff, (1) Hose clamp, (1) 2 1/2" Burst hose jacket.

Engine 3- Additional 50' 1 ¾" hose, 25 gallons Class "A" Foam concentrate, (1) 2 ½" Playpipe with shutoff, (1) Spare breathing cylinder 30 minute minimum, (1) 2 ½" Hydrant hose gate, (1) 2 ½" Burst hose jacket.

Ladder 1- (1) 35' or 40' Extension ladder, (3) SCBA units 30 minute minimum, (4) 12' x 18' Salvage covers, (1) Oxyacetylene cutting unit (circular saw may be substituted).

An interview was conducted with Chief Mark Walterhouse of the Auburn Hills Fire Department. Chief Walterhouse stated that they had not aggressively tried to improve the ISO classification rating by improving the fire department operations but it occurred overtime by necessity. In the last 10 years, Auburn Hills has hired 16 full-time firefighters and have purchased 3 new "quint" apparatus to improve its fire fighting capabilities for the community. Walterhouse also stated that the water department improved its policies on hydrant testing and the dispatch center upgraded its equipment since 1994. Walterhouse did indicate that Auburn Hills has no current plans to invite ISO back for a future evaluation and has heard that insurance rates sometimes go up as a city's ISO classification rating improves to a "4" or "3". (Walterhouse, personal communication)

Discussion

The research gathered allowed for the evaluation of data through survey instruments, follow up telephone conversations and personal interviews. This was valuable because it enabled the research to be targeted to cities of similar size and it was limited to the State of Michigan because of the limited trends seen in the Midwest states. As Table 1 illustrates the Midwestern states vary in their statistical distribution of classification ratings among their cities. Michigan statistics showed the highest number of cities and towns with a classification rating of "9" followed by "6". This differs greatly

when compared to Wisconsin and Indiana. A sample of “like-rated” cities in these states could be used as further research and may be one of the limitations of this applied research project. A city's ISO classification rating is one subject common to every fire department across the nation and it is often used as a measuring stick for municipalities in their quest for attracting new businesses and qualified workers. The pride of a very good ISO classification rating is sometimes displayed by fire departments on uniforms and buildings and by cities on street markers and is seen as a status symbol by many.

(Stevens, 1998)

The ISO rating system is used by the insurance industry in setting insurance rates on property in municipalities across the country. (Coleman, 2000) However, the classification rating system and the insurance rates for commercial and residential properties are not the same. A municipality with an ISO classification rating of “4” will experience a lower insurance rate for its business occupancies than its residential property owners. It is observed that only non-residential building owners benefit from a city's ISO classification rating improving to a “4”. Although data gathered from the survey instrument (Appendix C), shows that only 40% of those responding, state that businesses in their city benefited from the improvement. There is no identifiable financial incentive for a city to improve its rating below a rating of “4” from a residential insurance rate point of view. (Gasaway, 2003) It is very clear then that a fire department should base its fire protection on the level of service that is required to protect the public and not how much the property owner will save. (Coleman, 2000) To receive a ISO classification rating of “4”, the TCFD will need an additional 8.39 percentage credit points. (ISO 1994) These additional points can be gained by using a common sense approach to resource

management in the fire service. In the survey instrument (Appendix C) only 20% of the fire departments with an ISO classification rating of "4" stated that they had an active role in the improvement by the city. By using the system ISO has set in place, the TCFD administrative staff should make changes that would gain the most ISO credit points at the most affordable cost. (Fisher, personal communication, 2004) To realize such a goal, the TCFD must outline a plan of action and identify those items that are the easiest to attain.

Manpower is the largest component for possible points in the ISO evaluation, but would most likely require the addition of extra firefighters on shifts to receive credit, and thus would result in higher fixed costs for the department. Some departments use a combination of full-time and part-time staffing to receive maximum credit while keeping manpower costs affordable.

Because it is less costly than adding additional staffing, training is usually the one component of the fire department FSRS that can be improved upon at a minimal cost. It usually does not require heavy expenditures, as may be the case with the water supply or apparatus components. (Grindle, Jr. 1999) Dickson (2001) states in his article that the training facility proves one of the most important items a department can consider when evaluating possible credit points. A total of 35% of the possible 9 points were given for the training facility. Currently the TCFD utilizes the Northwest Michigan Regional Training Facility. The facility is used mostly for classroom instruction but does have a three story multi-purpose building for fire suppression evolutions. Dickson (2001) also states that the ISO will give points as substitution for some of the required components in this section. An example would be the availability of a film library for flammable liquids

in place of the construction of a combustible pit at the training facility. In addition, the scheduling of regular fire training as required by ISO can earn many credit points. Drills count for 65% of the overall training credit and can easily be obtained if a department follows the ISO guidelines. (Dickson, 2001) Another method to assure proper documentation and type of training is to use the "PF" forms provided in the Fire Suppression Rating Schedule Handbook. These forms have examples of the types of training and proper documentation ISO requires for a successful evaluation. (Grindle, Jr.1999) Finally, it is important that a fire department implement a preplanning training program involving all structures except single and multi-family dwellings. This can be done on a company basis or by the Fire Prevention division but is essential that each member receive training on the plans. By completing this component of training, a department will be much safer, more efficient, and earn a possible 1.35 credit points for their trouble. (Dickson, 2001) Chief Gasaway of Roseville, Minnesota increased training in an attempt to improve the city's ISO classification rating to a "2". (Gasaway, 2003)

The Water Supply and Communications components of the ISO evaluation are usually not the fire department's responsibility and improvements in these fields may not be result of the fire department efforts. These decisions are often made at the city administrative staff level. In the survey instruments as shown in (Appendix C), those cities with a class "4" rating had 70% of the respondents state that improvements were not made to the water departments or dispatch agencies. In those cities with a class "5" rating, only 15% had actually improved their water department or dispatch center.

It should be reminded that all efforts to improve the ISO classification rating should be performed with the right reasons in mind. A fire agency should base its fire

protection resources on the level of service required to meet the city's fire protection needs. (Coleman, 2000) ISO should not be used as an excuse to purchase equipment or hire personnel, and it also should not be used as the scapegoat when a poor evaluation has been issued. The ISO has its purpose and the fire department has its requirements. The ultimate goal is to use the ISO as a guideline to improve on a fire department's ability to perform their job.

Recommendations

Through the research and analysis included in the previous sections, recommendations will be made with the intent of developing a plan of improvements in the City's next evaluation. The strategy if implemented will be a coordinated effort between agencies to accomplish a common goal. To achieve an ISO classification rating of "4", the TCFD and the City Water Department must work together to obtain higher credit points without increasing the divergence points. Divergence points are those points which ISO penalizes a municipality because of the difference in capability between the fire department and the local water sources. In addition, the Grand Traverse Central Dispatch Center will need to make improvements in its operations to receive more credit points.

The first step for the TCFD is to set up an internal plan to correct those deficiencies as addressed by ISO in its Improvement Statement to the City Manager in 1994. A total of 8.39 percentage points are required to obtain the 60 points necessary to achieve the classification of "4". They are listed as follows:

- Establish minimum inventory lists for items carried on Engines 1, 2, and 3 as well as Ladder 1. By equipping all apparatus with the minimum established by ISO, full percentage points are obtained. (7.31 credited out of 10 in 1994)
- Establish the third fire station at the airport as a dedicated fire station with Engine 3 permanently assigned along with Airport Rescue 3 and 4 and provide full-time personnel for structure fire fighting as well as airport emergencies. This will enable the city to take advantage of the deployment of a third engine to cover geographical areas not credited in 1994. (1.99 credited out of 4 in 1994)
- Develop written policies establishing daily minimum staffing requirements for the City. ISO evaluators will credit the City .5 percentage points for each additional full-time firefighter per shift. Until this is completed, ISO will randomly select data from incident reports and calculate an average number of responders to determine credit points. (2.75 credited out of 15+ in 1994)
- Establish proper documentation of all training especially structural fire training. Develop an outline to provide 20 hours of structural fire training for each member and properly document this training. Use the Regional Training Center as a base for scenario training for Engine company evolutions on a quarterly basis. (3.15 credited out of 9 in 1994)
- Provide training in performing pre-fire plans of all commercial, industrial, institutional and other hazardous occupancies. Purchase Fire Zone software for laptop computers and install all necessary equipment in first response vehicles. Develop a program outlining the timetables for the pre-fire plans along with a list of the occupancies to be visited. (0 points credited in 1994)

- Policies on hose and fire pump testing are written. These policies shall be followed and proper documentation of these tests shall be assigned to various departmental personnel.
- It is recommended that the Fire Chief meet with the Director of Public Works and coordinate efforts to improve on the credit deficiencies from the ISO Improvement Summary of 1994. They include inspection of all hydrants twice a year, maintenance of the water mains and addition of hydrants to improve the spacing within the city. (31.06 points credited out of 40 in 1994)
- It is recommended that the Fire Chief meet with the Director of Grand Traverse Central Dispatch to discuss methods to improve on the credits given to the dispatch center from the last ISO evaluation. The main deficiency was the lack of a second alarm dispatch circuit to each station. (5.49 points credited out of 10 in 1994) It is obvious with the budget constraints that Grand Traverse Central Dispatch has experienced, improvements may not materialize.

If the noted changes were made by the respective agencies, the ISO classification rating for Traverse City would improve to a “4”. However, it is not known exactly how much the rating would improve. Additional research may be beneficial such as survey instruments to other Midwest states or a study directed at area commercial insurance carriers in order to gather data to show what benefit will be realized by the business community should the Traverse City classification rating improve to a “4”. This benefit if realized may help city administration officials in taking a more direct interest in the ISO evaluation.

The changes recommended here could be undertaken without a great deal of financial hardship on the part of the TCFD or the CTC. Making assignment changes and amending current departmental policies within the TCFD may be all that is needed to obtain an improved ISO rating of “4”.

In conclusion, it is very important to remember that a project, whose sole purpose is to improve a city's ISO classification rating, has many variables that must be considered. The first consideration is to determine if financial constraints are present and if so, are they considered too high of a price to pay? Is there a political motive within the community to push for change? Does the fire department or water department want the ISO evaluation used as an excuse for improving their respective departments? These questions may be the subject for future Applied Research Projects.

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Appendix A

The ISO Public Protection Classifications and Their Percentages

Class	Percentage
1	90.00 or more
2	80.00 to 89.99
3	70.00 to 79.99
4	60.00 to 69.99
5	50.00 to 59.99
6	40.00 to 49.99
7	30.00 to 39.99
8	20.00 to 29.99
9	10.00 to 19.99
10	No Fire Protection

Appendix B

Fire Insurance Classification

Improvement Statements

For Traverse City, Grand Traverse & Leelanau Counties, Michigan

Prepared By

ISO Commercial Risk Services, Inc.

AT THE REQUEST OF RICHARD LEWIS, CITY MANAGER

December 9, 1994

Fire Department

Credit for Engine Companies (Item 513).

For maximum credit in the Schedule, 3 engine companies are needed in your city.

These are calculated as follows:

3 for the Basic Fire Flow of 3500 gpm.

You have 3 engine companies in service. These are calculated as follows:

84 percent for Engine No.1 because of insufficient equipment and hose test records.

89 percent for Engine No.2 because of insufficient equipment and hose test records.

46 percent for Engine-Ladder No. L1 because of insufficient equipment, hose (there should be at least 1200 feet of 2 ½ inch or larger hose carried, pumper tests and hose test records.

Credit for Reserve Pumpers (Item 523) .

For maximum credit in the Schedule, 1 fully-equipped reserve pumper is needed. You have 1 reserve pumper. This is calculated as 83 percent for Pumper No. E4 because of insufficient equipment, pumper tests and hose test records.

Credit for Ladder Service. (Item 549).

For maximum credit in the Schedule, 2 ladder companies are needed in your city.

These are calculated as follows:

2 ladder companies due to the size of the area served.

You have 2 ladder companies. These are calculated as follows:

23 percent for Engine-Ladder (*) No. L1 because of insufficient equipment, elevating platform tests and lack of separate apparatus. .

9 percent for Engine-Ladder (*) No. E2 because of insufficient equipment and lack of separate apparatus.

(*) Limited to 50% credit maximum by Fire Suppression rating Schedule to dual operations.

Credit for Reserve Ladder Service (Item 553).

For maximum credit in the Schedule, 1 fully-equipped reserve ladder truck is needed.

You have 1 reserve ladder truck. This is calculated as follows:

15 percent for Truck No. E3 because of insufficient equipment.

Credit for Distribution (Item 561).

For maximum credit in the Schedule, all sections of the city with hydrant protection should be within 1 ½ miles of a fully-equipped engine company and 2 ½ miles of a fully-

equipped ladder or engine-ladder company. The distance to be measured along all-weather roads.

Credit for Company Personnel (Item 571).

An increase in the on-duty company personnel by one person will increase the fire department credit by 0.50%.

Credit for Training (Item 581).

For maximum credit in the Schedule, complete facilities should be provided for training and the training program should be improved. You received 35 percent credit for the current training program and the use of facilities.

For maximum credit in the Schedule, pre-fire planning inspections of each commercial, industrial, institutional, and other similar-type buildings should be made twice a year up-to-date notes and sketches.

For maximum credit in the schedule, complete records should be kept of all training.

	Actual	Maximum
1. (Item 513) Credit for Engine Companies	7.31	10.00
2. (Item 523) Credit for Reserve Pumpers	0.71	1.00
3. (Item 532) Credit for Pump Capacity	5.00	5.00
4. (Item 549) Credit for Ladder Service	0.82	5.00
5. (Item 553) Credit for Reserve Ladder Service	0.12	1.00
6. (Item 561) Credit for Distribution	1.99	4.00
7. (Item 571) Credit for Company Personnel	2.75	15.00+
8. (Item 581) Credit for Training	3.15	9.00
9. (Item 590) Total Credit for Fire Department	21.85	50.00

Appendix C

Survey of Cities in Michigan with an ISO of 4

Bay City	Monroe	Portage
Ferndale	Gross Point Woods	Muskegon
Bloomfield Twp	Dearborn Heights	Holland
Ann Arbor		

1. How long has the city been at an ISO rating of 4?

Responses: More than 10 years (2)
 5 – 10 years (4)
 Less than 5 years (2)
 Do not Know (2)

2. Did the city's fire department have a part of the plan to bring the ISO PPC to a 4?

 2 Yes 5 No 3 Don't Know

3. Did the city make significant changes to its fire department operations in order to improve its ISO PPC to 4 ?

 2 Yes 7 No 1 Don't Know

4. Did the city make changes in its water department or communications to improve its ISO PPC rating to 4?

 3 Yes 7 No

5. Did the city's business owners realize a benefit of lower insurance rates because of the improvement to an ISO PPC of 4?

 4 Yes 3 No 3 Don't Know

Appendix D

Survey of Cities in Michigan with an ISO PPC of 5

Alpena	Adrian	Allen Park	Benton Harbor
Grand Haven	Grand ledge	Howell	Harper Woods
Owosso	St. Joseph	Midland	Sault Ste Marie
Rochester	Mt. Clemens	Hillsdale	East Grand Rapids
Gross Pt Farms	Gross Pt Park	Auburn Hills	Farmington Hills

1. How long has the city had its current ISO PPC rating of 5?

More than 10 years	(12)
5- 10 years	(4)
0- 5 years	(2)
Don't Know	(2)

2. Is the city currently trying to improve on its current ISO PPC rating of 5?

4 Yes 8 No 8 Don't Know

3. Has the business community inquired or requested the city to try to improve its ISO PPC rating?

1 Yes 15 No 4 Don't Know

4. What changes has the fire department made which may increase its operations to improve its ISO PPC rating? (Some may have more than one response)

Equipment	6
Apparatus	0
Manpower	0
Training	6
Stations	1
Pre-fire plans	12

5. Is the city attempting to improve its communications and water supply in order to improve its ISO PPC rating?

3 Yes 15 No 2 Don't Know

Appendix E

Insurance Services Organization

July 22, 2004

Grand Traverse Metro Area Townships

Classification Details		Credit
	Actual	Maximum
Receiving and Handling Alarms		
1, Credit for telephone service	1.90	2.0
This item reviews the facilities provided for the public to report fires, including the listing of fire and business numbers in the telephone directory.		
2. Credit for operators	1.80	3.0
This item reviews the number of operators on-duty at the communication center to handle fire calls.		
3. Credit for dispatch circuits	1.50	5.0
This item reviews the dispatch circuit facilities used to transmit alarms to fire department members.		
4. Totals credit for receiving and handling alarms	5.20	10.00